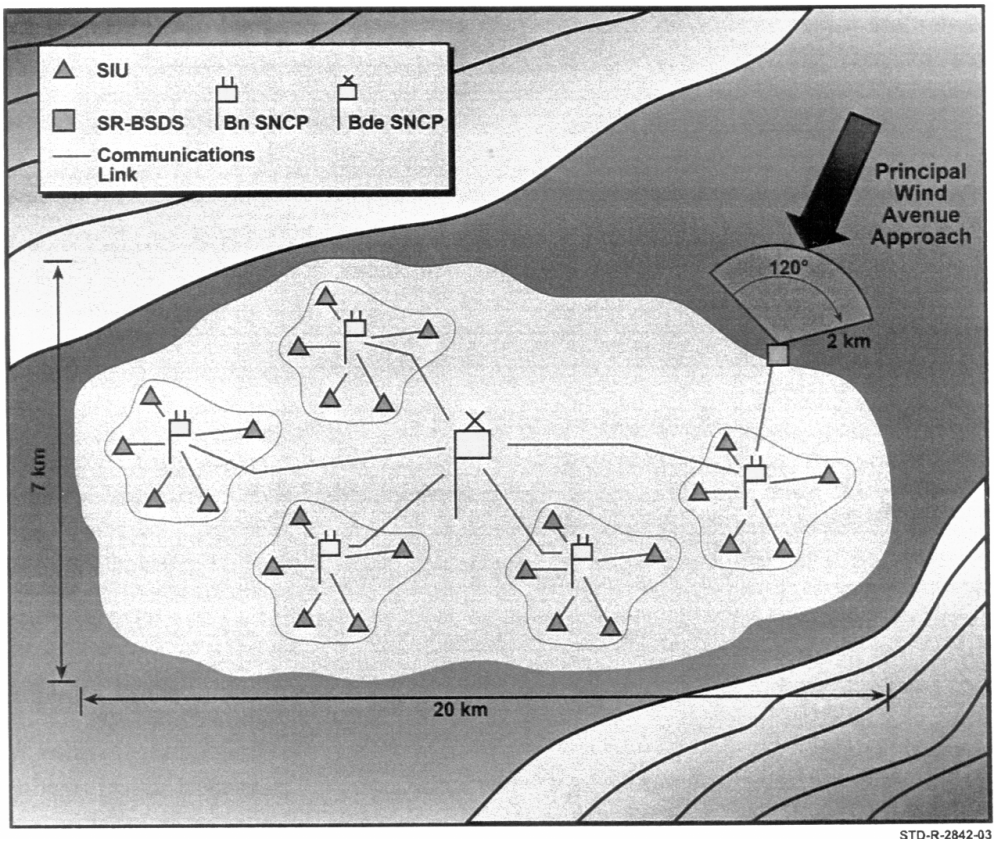
JOINT BIOLOGICAL REMOTE EARLY WARNING SYSTEM (JBREWS) ACTD



Joint Program Office-Biological Defense ACTD

Total Number of Systems:	1 (serves 5 battalions)
Sample Identification Units:	32
Electrical Generators:	32
Short Range Biological Standoff Detection System:	1
Sensor Network Command Posts:	18
Master Radio Suites with Antenna Masts:	9
Network Communications Repeaters:	53
Total Program Cost (TY$):	$56.8M
Average Unit Cost (TY$):	N/A
Termination of ACTD:	2QFY03
USEUCOM Military Utility Assessment:	1QFY01

Prime Contractor

Johns Hopkins Applied Physics Laboratory (sys engineering / conops support)

Other contractors are ACS Defense, Midwest Research Institute, Majesko/Bio Med Tech, Sentel Corp, Freewave, Fibertek, Inc., and Camber Corp. Also participating are U.S. Army Soldier Biological and Chemical Command; Naval Surface Warfare Center, Dahlgren; Los Alamos National Laboratory; and Lawrence Livermore National Laboratory.

SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2020

The system network is comprised of an integrated suite of sensors consisting of a Short Range, Biological Standoff Detection System (SR-BSDS) and a Deployable Unit Biological Detection System (DUBDS) made up of Sample Identification Units (SIUs), the Sensor Network Command Post (SNCP), and the associated communications architecture. The ACTD system employs digital communications, compatible with JWARN. It is designed to support a self-discovering, self-healing network.

The JBREWS ACTD is intended to demonstrate an operationally capable biological remote early warning system for use by deployed ground forces in a static environment. This system should provide both automated warning of a biological attack and automated reporting of the threat to appropriate command and control nodes. It is the intent of this ACTD to demonstrate mature technologies that significantly improve the ability of a deployed force to detect a biological attack before exposure and/or identify a biological warfare attack to afford the commander the knowledge to engage medical treatment options. This unique capability mitigates the effects of biological weapons on the Joint Force.

The JBREWS ACTD system is designed to be capable of early detection, warning and automated reporting, and presumptive identification of up to eight Biological Warfare (BW) agents. The ACTD system will provide brigade/JTF area commanders (5 BN equivalent/120 km^2) with the capability to accelerate the decision cycle to warn and protect U.S. Forces and provide a real-time situational awareness of the BW defense network.

The JBREWS ACTD products will enhance the overall biological force protection system In-Theater by providing expeditionary BW sensors organic to the JTF/unit capable of autonomous operation in forward areas of a fixed installation with a much greater sensor-density than currently fielded or developmental biological detection systems. The JBREWS ACTD products will exploit the capabilities of networked sensors at a tactical level to enhance the warning and reporting of BW attacks.

The JBREWS ACTD contributes to ***Joint Vision 2020*** by enhancing the survivability of Joint Forces in that it provides increased situational awareness and ***information superiority*** to supported headquarters and forces. By providing these elements with the real-time capability of detecting biological agent cloud arrival, JBREWS contributes to ***full-dimensional protection*** to the force.

BACKGROUND INFORMATION

The United States European Command (USEUCOM) is the operational sponsor for the JBREWS ACTD. Stand-off detection of biological warfare agents is among the top five CW/BW priorities of all CINCs. Currently, stand-off detection remains unresolved before FY09. BW detection/identification organic to maneuver forces is not yet resolved.

There is a need to provide a biological remote early warning capability, organic to combat forces, across the battlespace that will result in reliable, accurate and timely detection of BW agents.

The Joint Requirements Oversight Council (JROC) Mission Need Statement for Department of Defense (DoD) Biological Defense of August 31, 1992 states that operating forces have an immediate need for the detection and identification of biological threat agents. This detection and identification is needed to provide early warning capabilities at mobile and fixed operating locations, and for mobile dismounted forces and naval and air platforms during day and night operations.

The JBREWS ACTD was initiated based on the 1995 Commander-In-Chief/Joint Requirements Oversight Council (CINC/JROC) Counterproliferation (CP) Priorities list, which stated that the detection and characterization of Biological and Chemical Warfare (BW/CW) agents were the highest priority. CINC requirements are for a capability that provides early warning of on-target/off-target biological warfare attacks for protection of U.S. Forces. This capability needs to:

- Provide early warning of biological hazards.
- Identify agent by type.
- Transmit information into a force wide warning and reporting system (JWARN).
- Detect biological warfare agents out to 2 km (good visibility at night).

The current JBREWS operational requirement document was withdrawn by the JSIG in September 1998. Operational requirements are now being addressed in two draft ORDs, the Joint Biological Tactical Detection System and the Joint Biological Stand-off Detection System; neither is yet approved.

JBREWS was placed on Oversight in January 2000.

TEST & EVALUATION ACTIVITY

The JPO-BD conducted a developmental field test of the JBREWS ACTD at Dugway Proving Ground in May 2000. To take advantage of other activities, this field test was done at the same time as (but not in competition with) the JBPDS Limited User Test and Operational Assessment; in addition, six Portal Shield Mark III samplers were deployed during the same time. The final JBREWS demonstration was conducted during September 6-18, 2000 at Dugway Proving Ground. JBREWS systems or components demonstrating sufficient maturity and operational capability will be candidates for residuals to be delivered to USEUCOM during 2QFY01. USEUCOM's military utility assessment should be completed by mid-January 2001, and will be based on the September 2000 demonstration. Should USEUCOM, and possibly other commands, decide to seek production or further development of JBREWS, DOT&E will provide appropriate oversight.

TEST & EVALUATION ASSESSMENT

The JBREWS ACTD has a draft TEMP to guide the testing for the ACTD. Although there is no present plan to place JBREWS into production, some of the JBREWS technology may be incorporated into other biological defense systems that are on DOT&E oversight; the Joint Biological Point Detection System is one possibility. If that happens, formal test and evaluation should address the operational effectiveness and operational utility of those systems, as well as the adequacy of the test venues.

JBREWS demonstration data from September 2000 will be provided to DOT&E when it is completely assembled. During the demonstration in September 2000, military personnel from USEUCOM's V Corps, 1st Infantry Division operated the JBREWS ACTD. This same unit will receive the JBREWS ACTD residual equipment should it be sent to Europe for employment.

During the September demonstration, the SR-BSDS portion of this ACTD did not perform as expected. Since this is one of the ACTD's key components, the technical manager (JPO-BD) is assessing

the maturity of this technology and its appropriate use by USEUCOM. The operational manager, USEUCOM, will assess the SR-BSDS in the military utility assessment.

CONCLUSIONS, RECOMMENDATIONS AND LESSONS LEARNED

In the event USEUCOM or another Command seek production or further development of this system, a TEMP with a full operational test and evaluation program will be required. Biological defense technologies developed by this ACTD that become parts of other systems need to receive full operational evaluation prior to equipping operational units.

ACTDs can bypass the disciplined evaluation of effectiveness and suitability that DoD regulations direct of all programs and DOT&E requires of Oversight programs. There is always the risk that, while the developers look at the ACTD military utility assessment as an evaluative activity, the user command may look upon the system as a "go to war" capability when in fact its effectiveness and suitability have not been established.